

Supplemental Material

Table S1: Ingredients of commercial dental husbandry diet provided to dogs at baseline (pre-study)

Chicken, chicken meal, brewers rice, ground yellow corn, ground wheat, corn gluten meal, animal fat preserved with mixed-tocopherols, dried beet pulp, brewers dried yeast, powdered cellulose, dried egg product, animal liver flavor, glycerin, salt, potassium chloride, calcium carbonate, phosphoric acid, tetra sodium pyrophosphate, mono and dicalcium phosphate, Vitamin E supplement, L-Lysine monohydrochloride, choline chloride, L-ascorbyl-2-polyphosphate, zinc sulfate, ferrous sulfate, manganese sulfate, niacin, potassium sorbate, vitamin A supplement, calcium pantothenate, thiamine mononitrate, copper sulfate, Vitamin B-12 supplement, riboflavin supplement, pyridoxine hydrochloride, garlic oil, folic acid, menadione sodium bisulfite complex, calcium iodate, vitamin D3 supplement, biotin, sodium selenite, C-2621

Table S2: Blood parameters of renal function, digestive enzymes and fasting blood glucose of dogs fed commercial husbandry diet, grain-containing diets without (GB) or with (Oligo) the addition of the oligosaccharide raffinose, or a grain-free pea-based diet (GF) over 5 week feeding periods

	Referenc e	Husban dry	GB	Oligo	GF	p value
Urea (mmol/L)	3.5 - 11.4	5.5 ± 0.24	5.6 ± 0.17	5.7 ± 0.19	5.7 ± 0.25	0.762
Creatinine (µmol/L)	41 - 121	60 ± 3.4	59 ± 3.2	61 ± 3.3	61 ± 3.6	0.795
Amylase (U/L)	343 - 1375	458 ± 41.7	540 ± 54.5	676 ± 125.8	506 ± 41.1	0.180
Lipase (U/L)	25 - 353	46 ± 6.6	61 ± 9.1	91 ± 26.2	54 ± 8.0	0.182
Glucose	3.1 - 6.3	4.4 ±	4.4 ±	4.6 ±	4.4 ±	0.612

(mmol/L)	0.16	0.18	0.14	0.13
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N=8. Statistics with One-Way Repeated Measures ANOVA. Different letters indicate significant differences in Fisher's LSD post-hoc analysis ($p < 0.05$)

Table S3: Blood parameters of hepatic function of dogs fed grain-containing diets without (GB) or with (Oligo) the addition of the oligosaccharide raffinose, or a grain-free pea-based diet (GF) over 5 week feeding periods

	Reference	Husbandry	GB	Oligo	GF	p value
TB (µmol/L)	1.0 – 4.0	0.9 ± 0.15 ^a	1.3 ± 0.09 ^b	1.1 ± 0.15 ^b	1.2 ± 0.15 ^b	0.023
DB (µmol/L)	0 – 2.0	0.5 ± 0.06	0.6 ± 0.04	0.6 ± 0.09	0.6 ± 0.06	0.196
IB (µmol/L)	0 – 2.5	0.4 ± 0.16	0.8 ± 0.08	0.6 ± 0.10	0.5 ± 0.10	0.090
ALP (U/L)	9 – 90	63 ± 14.5 ^a	42 ± 6.5 ^b	37 ± 4.7 ^b	42 ± 6.2 ^b	0.007
GGT (U/L)	0 – 8	3 ± 0.5	1 ± 0.8	3 ± 1.1	2 ± 0.8	0.469
ALT (U/L)	19 – 59	23 ± 1.1	22 ± 1.1	21 ± 1.2	24 ± 1.4	0.091
GLDH (U/L) [†]	0 – 7	2.1 ± 0.30	2.9 ± 0.35	2.5 ± 0.27	2.5 ± 0.27	0.326
CK (U/L)	51 – 418	129 ± 18.3	132 ± 14.4	113 ± 7.4	128 ± 13.7	0.745
TP (g/L)	55 – 71	51 ± 1.7	52 ± 1.0	52 ± 1.4	51 ± 0.8	0.587
Albumin (g/L)	32 – 42	31 ± 1.7	33 ± 1.0	33 ± 1.4	33 ± 1.2	0.150
Globulin (g/L)	20-34	20 ± 0.6 ^a	19 ± 0.5 ^{ab}	19 ± 0.5 ^{ab}	18 ± 0.7 ^b	0.026
A:G	1:06 – 1:82	1.58 ± 0.11 ^a	1.73 ± 0.08 ^{ab}	1.79 ± 10.10 ^b	1.84 ± 0.13 ^b	0.019

N=8. Statistics with One-Way Repeated Measures ANOVA or Friedmans repeated-measures ANOVA on ranked data[†]. Different letters indicate significant differences in Fisher's LSD post-hoc analysis (p<0.05). TB = total bilirubin; DB – direct bilirubin; IB = indirect bilirubin; ALP: Alkaline phosphatase; GGT: Gamma-glutamyl transferase; ALT: Alanine aminotransferase; GLDH: Glutamate dehydrogenase; CK: Creatinine kinase; TP = total protein; A:G: Albumin to globulin ratio.

Table S4: Blood electrolytes of dogs fed a commercial husbandry diet, or grain-containing diets without (GB) or with (Oligo) the addition of the oligosaccharide raffinose, or a grain-free pea-based diet (GF) over 5 week feeding periods

	Reference	Husbandry	GB	Oligo	GF	p value
Na (mmol/L)	140 - 153	146 ± 0.4	147 ± 0.6	146 ± 0.4	147 ± 0.5	0.228
K (mmol/L)	3.8 - 5.6	4.5 ± 0.06	4.5 ± 0.09	4.4 ± 0.05	4.6 ± 0.08	0.432
Cl (mmol/L)	105 - 120	114 ± 0.5	113 ± 0.5	113 ± 0.4	114 ± 0.5	0.367
HCO ₃ ⁻ (mmol/L)	15 - 25	19 ± 0.5 ^a	21 ± 0.2 ^b	21 ± 0.3 ^b	21 ± 0.3 ^b	<0.001
Anion Gap (mmol/L)	12 - 26	18 ± 0.5 ^a	17 ± 0.6 ^b	16 ± 0.3 ^b	16 ± 0.4 ^b	0.027
Ca (mmol/L)	1.91 - 3.03	2.44 ± 0.038	2.46 ± 0.032	2.45 ± 0.037	2.48 ± 0.030	0.366
P (mmol/L)	0.63 - 2.41	1.21 ± 0.048	1.16 ± 0.029	1.18 ± 0.041	1.27 ± 0.065	0.063
Mg (mmol/L)	0.70 - 1.16	0.79 ± 0.018	0.81 ± 0.017	0.80 ± 0.017	0.81 ± 0.017	0.649

N=8. Statistics with One-Way Repeated Measures ANOVA. Different letters indicate significant differences in Fisher's LSD post-hoc analysis (p<0.05)

Na: sodium; K: potassium; Cl: Chloride; HCO₃⁻: Bicarbonate; Ca: Calcium; P: Phosphorous; Mg: Magnesium